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Levels of Analysis in Entrepreneurship Research:
Current Research Practice and Suggestions for the Future

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Introduction

In their path-breaking article, Low & MacMillan (1988) suggest that entrepreneurship be defined as the 'creation of new enterprise'. The purpose of entrepreneurship research should be to 'explain and facilitate the role of new enterprise in furthering economic progress' (p. 141). Such a delineation, they hold, would encourage researchers to consider both micro and macro perspectives. They argued that researchers must acknowledge that entrepreneurship studies could and should be carried out at multiple levels of analysis and that these analyses complement each other. The reasons for studying entrepreneurship on multiple levels of analysis lie in the characteristics of the entrepreneurial phenomenon itself. Entrepreneurship takes place and has effects on different societal levels simultaneously. Schumpeter (1934) already linked the entrepreneurial initiatives of individuals to the creation and destruction of industries as well as to economic development. Several other scholars have contributed to increasing our understanding about entrepreneurship on different levels of analysis, ranging from the individual to the economy-at-large. The following paragraph highlights some of the levels of analysis that have been identified. In doing so it illustrates the richness of approaches.

It is individuals who carry out entrepreneurial initiatives (Schumpeter, 1934). These initiatives take place in organizational contexts (Moran & Ghoshal, 1999, Shane & Venkataraman, 2000), often resulting in the formation of new firms (Gartner, 1988; Schumpeter, 1934) or the rejuvenation and improved performance of established firms (Covin & Slevin, 1991; Lumpkin & Dess, 1996; Wiklund, 1998; Zahra, 1991). Entrepreneurial initiatives often result in innovations, which in turn may alter existing industries (Schumpeter, 1934), or create new ones (Aldrich & Martinez, this issue). The belief that such processes have profound effects on employment and economic growth on the societal level (Baumol, 1993; Birch, 1979; McGrath, 1999) is one of the major reasons for the increased interest in entrepreneurship.

The above does not only illustrate that studies on different levels of analysis can be valuable, but clearly shows that these levels are intimately entwined. Therefore, as Low and MacMillan suggested (1988, p. 152), there may be reason to integrate different levels of analysis in empirical research.

Low & MacMillan made their recommendations over a decade ago. Given the rapid expansion of the entrepreneurship field it is valuable to examine to what extent their views have influenced subsequent research. The first purpose of this article is to examine what levels of analysis, or combinations thereof, are favored by entrepreneurship researchers, and whether this has changed over the past decade. Our second purpose is to give specific examples of progress related to the different levels of analysis. These examples illustrate that valuable knowledge can be obtained on different levels of analysis and we hope that they can inspire future research.

The choice and definition of level of analysis is not only important in relation to the design of empirical studies. It is also essential for the appropriateness of the utilization of different theories (Davidsson & Wiklund, 2000; Gartner & Brush, 1999) and the suitability of different conceptualizations of entrepreneurship. Theories have been specifically developed to address, for instance, organizational or individual issues and are therefore not equally well suited for all levels of analysis. Our third purpose, therefore, is to discuss how future progress can be made through more frequent use of appropriate but largely overlooked levels of analysis and combinations of different levels of analysis. We hold that key to further progress is close correspondence between the conceptualization of entrepreneurship and level(s) of analysis.

In the remainder of the article, level of analysis refers to the hierarchy of aggregation in terms of micro and aggregate level. More fine-grained categorizations of micro (e.g. individual, team, firm) and aggregate (e.g. region, nation) levels are possible as well as alternative hierarchies (e.g., firm, industry, economy-at-large vs. firm, region, nation). The level on which the

principal research questions are posed and analyses carried out rather than the level at which data are collected determines the level of analysis. It is, for instance, common to first collect and then aggregate data from individuals in regional studies of entrepreneurship. If the analyses compare regional differences in entrepreneurial activity based on the aggregation of individuals, this would be a study at the regional level even though data were collected from individuals.

Levels of analysis in published entrepreneurship research

In order to assess what levels of analysis entrepreneurship researchers favor we analyzed the contents of the two leading (Romano & Ratnatunga, 1997) US-based entrepreneurship journals *Entrepreneurship Theory & Practice* (ETP) and *Journal of Business Venturing* (JBV), as well as the leading European journal in the field, *Entrepreneurship and Regional Development* (ERD). In order to be able to see trends over the past decade, the 1998 contents were contrasted with the contents of the 1988 (JBV) or 1989 (ETP; ERD¹) volumes of the same journals. The total number of articles for each period was very similar; 64 articles from 1988/89 and 63 from 1998. Both empirical (101) and conceptual (26) articles were included whereas *ETP* teaching cases were excluded. A listing of the articles and their classification can be found in Höglund, Lundgren, & Songsong (1999)

Three research assistants made the classifications of the articles into single or multiple categories according to the main analytical focus of the research. Although most authors did not explicitly state what was their level of analysis or were inconsistent in their use of implicit levels, quantitative articles were in most cases relatively easy to classify. Both the independent and dependent variables utilized in the analyses guided the classifications. Qualitative and conceptual articles were in some cases more difficult to assess. Ambiguous cases were resolved through de-

¹ ERD was launched in 1989 and ETP changed to its current name and focus the same year.

liberations among the raters and the principal investigators. In every case a final classification into one or multiple categories could be agreed upon.

Our analysis concerns the distribution of articles across levels as well as changes in that distribution over time. As we only investigate the endpoints of the ten-year period there is some risk that our results concerning change arise from stochastic variation rather than trends. However, Chandler & Lyon, (this issue) who included all issues of JBV and ETP over the decade, confirm several of our results. With that, let us now turn to the results displayed in Table 1.

Insert Table 1 about here

The results can be summarized as follows:

1. Entrepreneurship research is dominated by micro level analysis, predominantly using the *firm* or the *individual* as the level of analysis.
2. This micro level dominance seems to have increased over the years. Accordingly, the share of aggregate level studies has declined.
3. The use of the individual as level of analysis in entrepreneurship research remains stable. While the share of ‘individual [only]’ has dropped, ‘firm & individual’ rose from one (1.6%) to seven (11.1%).
4. The number of studies using alternative micro-levels such as the *team* or the *innovation*, either alone or in combination with other levels, remains minimal.
5. There seems to have been little heeding Low & MacMillan’s (1988) call for micro/aggregate mix approaches. The share of studies using such a combination is small and appears to be stable.

Low & MacMillan's recommendations for approaches combining units on micro and aggregate levels of analysis, then, seems to have received limited following. In other respects change is traceable. One apparent trend is towards dominance for the firm as the level of analysis, either alone or in combination with the individual or other micro or aggregate levels. All in all, the firm level is represented in no less than 62 percent of the 1998 articles, as compared with 36 percent of the 1988/89 articles. Another apparent trend is the relative decline for all types of aggregate levels of analysis. This may, however, be due to selection bias. As specialized journals appear, research based on aggregate levels finds other outlets, e.g., the *Small Business Economics* journal.

Another observation is that rather 'conventional' levels of analysis totally dominate the picture. As noted by Cooper (1995) researchers have a preference for collecting data that are easily obtainable rather than data that are important. Levels for which sampling frames and/or secondary data are not readily available, such as 'team', 'network', 'cluster' or 'project' have very limited representation in Table 1.

In at least one sense the trend may have been in the direction Low & MacMillan suggested. They complained that many early works were confined largely to 'documenting the occurrence of entrepreneurs or their personality characteristics, with little attempt to uncover causal relationships...' (Low & MacMillan, 1988, p. 141). The tendency for 'individual & firm' to increase as 'individual' declines may be a positive sign if it means that individual characteristics are systematically related to firm level behavior and/or outcomes rather than just describing the individuals who start and run independent businesses. However, as we will explain later, trying to explain venture outcomes solely with individual characteristics is not a wise strategy.

Examples of progress related to different levels of analysis

Although the above overview may indicate that little has happened over the past decade in entrepreneurship research, it is in fact not difficult to find examples of progress when we look

instead for exemplary research employing different levels of analysis. In this section we will comment briefly on some such developments. In doing so we draw upon a broad range of entrepreneurship literature published during the last decade. Obviously, the knowledge, interests and preferences of the present authors will bias such an exercise. The selection of studies is admittedly not based on a thorough review of all entrepreneurship research. Neither is it based on stringent application of objective criteria of what constitutes 'good' research. However, without any aspirations to claim completeness we have focused on studies judged to contribute to knowledge development through comprehensiveness, comparison, accumulation, frontier-pushing and/or well-designed empirical theory-testing.

Individual and team levels

As noted above, Low & MacMillan (1988, p. 141) criticized the 'psychological traits' approach to entrepreneurship. Most entrepreneurship researchers today would agree that the focus on stable psychological characteristics of (successful) entrepreneurs is unsatisfactory (e.g. Aldrich & Zimmer, 1986, pp. 4-5). One more promising alternative is the application of more modern psychological theory in research comparing 'entrepreneurs' to other groups. Busenitz & Barney (1997) chose such an approach in a study on biases and heuristics in strategic decision making among entrepreneurs and large firm managers. They found strong support for their hypotheses that entrepreneurs show more overconfidence and rely more heavily on the representativeness heuristic. Another example of a high-potential study of entrepreneurial decision-making is Sarasvathy (1999) who concluded that expert entrepreneurs' decision process was characterized by 'effectuation' rather than analytical or bayesian processes, and therefore 'an inversion of what we teach students in marketing classes.' Research of this kind may provide a rationale for seemingly 'irrational' behaviors on the part of entrepreneurs. It could provide a teach- and learnable alternative to normative, textbook decision-making that seems neither to be applicable in

genuinely uncertain situations nor characteristic of how successful entrepreneurs actually make decisions.

Research focusing on the individual need not necessarily be psychological. Given the early emphasis on entrepreneurs' psyche it is somewhat ironic that socio-demographic variables seem to discriminate better between business founders and other groups (Reynolds, 1997; Stanworth, Blythe, Granger, & Stanworth, 1989). An important task here is to build a theoretical understanding of *why* these socio-demographic differences emerge and what they mean. This has barely begun. A promising start is Aldrich, Renzuli, & Langton (1998) who investigate alternative reasons why those who had self-employed parents are more likely to become business founders themselves. True, there are sociological theories of 'relative deprivation' (Hagen, 1962) or 'social marginality' (Stanworth & Curran, 1973) that make predictions about the socio-demographics of entrepreneurs, but these theories seem at best to deliver partial truths (Shapero & Sokol, 1982).

Other studies are more directly in line with Gartner's (1988; 1989) call for focus on behavior. Bhawe (1994) was among the first to attempt to describe what entrepreneurs actually do through the process of launching a new venture. Although his study is based on a small sample, it provides a richness of ideas to test in more broadly based studies. The distinction between novice, serial and portfolio entrepreneurs is an example of a potentially important behavior-based categorization (see Ucbasaran, Westhead & Wright, this issue). Other examples are the (related) studies by Carter, Gartner, & Reynolds (1996), and Alsos & Kolvereid (1998) on start-up event sequences. Their methodology to assess what actions 'nascent entrepreneurs' take, and in what sequence, in order to get their ventures up and running has recently been implemented and further developed by the Entrepreneurial Research Consortium (ERC) (Reynolds, forthcoming). This means that we will soon see large-scale, real time data from different countries on what more and less experienced – and more and less successful – business founders do during the start-up proc-

ess. This is perhaps the most promising development to be expected on the individual level of analysis.

Notwithstanding the fact that no articles on entrepreneurial teams were found in our review, recent research suggests that a large share of all new ventures are started by teams rather than individuals acting alone. Teams may be particularly common within new industries (Kamm, Shuman, Seeger, & Nurick, 1990). Despite this fact, research on entrepreneurial teams is still in its infancy. However, research on entrepreneurial teams need not start from scratch. It can draw on research on top management teams, group dynamics, conflict and performance from strategic management, social psychology and organizational behavior (Birley & Stockley, 2000).

Firm level

During the last decade, management researchers have emigrated to or extended the scope of their interests to entrepreneurship issues. This influx has brought more theory-driven approaches to the field. For example, the popularity of the resource-based view of the firm in strategic management has been paralleled in entrepreneurship research (e.g. Brown, 1996; Brush & Chaganti, 1997; Brush, Greene, Hart, & Edelman, 1997; Chandler & Hanks, 1994; Greene & Brown, 1997; Mosakowski, 1998).

It has also led to a broader acceptance of entrepreneurship as a phenomenon not restricted to independent small firms, but present also in large and established organizations. For instance, *Entrepreneurship Theory and Practice* recently devoted two full issues to corporate entrepreneurship (1999, Vol. 23, Spring and Fall). The editors' opening line was 'The study of corporate entrepreneurship (CE) has become an integral part of the literature' (Zahra, Karutko, & Jennings, 1999, p.5).

The growing emphasis on entrepreneurship in different organizational contexts is one important development. But most firm level entrepreneurship research still focuses on new and/or

small firms. One effort in this area that has been comprehensive and methodologically sound enough to have lasting value and attract some following is Arnold Cooper's longitudinal work on prediction of new venture performance (Cooper, 1995; Cooper & Gimeno-Gascon, 1992; Cooper, Gimeno-Gascon, & Woo, 1994). One lesson here is that it is difficult to account for a large share of the variance in performance, even if a study covers many potential types of influence. This calls for more dynamic designs, following up not only performance variables but also the development of explanatory factors.

Low & MacMillan (1988, p. 144) noted that "it is still surprising that so little work has been done in the area of entrepreneurial strategy". Researchers have responded to this remark and several studies related to entrepreneurial strategies have since been conducted. The possibility of conducting such research was facilitated by the development of measures of firm level entrepreneurial orientation by Miller (1983) and subsequently refined by Covin & Slevin (1986; 1989). Wiklund (1998) lists no less than eleven empirical studies that have employed some variant of this measure, albeit under different labels (e.g., 'entrepreneurship'; 'entrepreneurial behavior' and 'strategic posture') and several have appeared since. As a result, we now have a meaningful pool of results concerning how entrepreneurial strategy, operationalized as entrepreneurial orientation, influences various dimensions of performance either independently or in interaction with other variables. In addition, its relationship with other operationalizations of entrepreneurial management has been investigated (cf. Brown & Davidsson, 1998).

Industry/population level

Low & MacMillan (1988, p. 186) considered the population ecology perspective as having the potential to provide theory-driven new insights into entrepreneurship phenomena at an aggregated level. Aldrich (1999) has in his evolutionary approach shown that it is possible to apply the theoretical stringency of ecological theory to entrepreneurship studies in a meaningful way. Parts

of his review and synthesis of theoretical and empirical progress regarding research on the level of industries or organizational populations can be found elsewhere is this issue (Aldrich & Martinez, this issue)

Aldrich (1999), pp. 257-258) calls for investigations of entire industries from their emergence and through their subsequent developments. Such research requires rather heroic efforts and are, predictably, rare. But they do exist, and they have great potential for sound theory development when the researcher or his/her readers have the ability to go beyond description to abstracted sense making. One example of a study of this kind is Walsh's thorough investigation of the semi-conductor industry over a fifty-year period (Walsh, 1995; Walsh & Kirchhoff, 1998). Another high-tech industry whose development has been analyzed in detail from an entrepreneurship perspective is the Swedish mobile phone industry (Mölleryd, 1999).

An even more fascinating research feat is Gratzner's complete reconstruction of the Automat restaurant industry in Sweden during its entire life cycle, from 1899 to 1938 (Gratzner, 1996). Within a Schumpeterian theoretical framework and employing prosopographic method ('picking small pieces from many different sources') Gratzner – a trained economic historian – tracks the new industry's emergence, growth and decline. Interesting details in this study are that none of the significant actors in the Automat industry came from conventional restaurants or the hospitality industry, and that none of them became significant in its successor, self-service restaurants (some had success in other industries). Unfortunately, only parts of this rich study is available in English (Gratzner, 1999). The same is true for another unusually comprehensive research effort. In Italy, Raffa and his collaborators have followed a sample of software firms close-up for more than a decade in real time, through series of structural and strategic transitions. A fraction of this intriguing research is reported in Raffa, Zollo, & Caponi (1996).

Regional level

Bruno & Tyebjee (1982) as well as Keeble, Potter, & Storey (1990) noted that little empirical evidence existed on how regional environments affect entrepreneurship. This is one area where considerable progress has been made. Forerunners reporting results from Germany (Fritsch, 1992), the US (Reynolds & Maki, 1991) and the UK (Westhead & Moyes, 1992) were topped in 1994, when systematic studies on the influence of regional characteristics on new firm formation rates conducted in France, Germany, Ireland, Italy, Sweden, UK and the US, were published in a special issue of the *Regional Studies* journal (Vol. 28, No. 4). Summarizing the results, Reynolds, Storey, & Westhead (1994, p. 453) conclude that three generic factors on the regional level have a positive impact on new firm formation rates. These are: a) growth in demand, indicated by population growth and growth in income, b) a population of business organizations dominated by small firms, and c) a dense, urbanized context. It is all too rare that conclusions from empirical entrepreneurship research have as solid backing as this.

Another important development regarding the regional level of analysis is the research on so called ‘industrial districts’, much of which was inspired by Piore & Sabel’s (1984) book ‘The Second Industrial Divide’. Despite the accumulating number of studies it is our opinion that, based on the district research available in English, the field still largely lacks abstracted theoretical sense-making of the many fascinating descriptions of the inner workings of districts (see, e.g., Staber, 1996). There has also been research that has seriously questioned the ‘rosy’ image of industrial districts (Curran & Blackburn, 1994; Harrison, 1994). In summary, it would appear that although interesting and comprehensive empirical entrepreneurship research on the regional level has been undertaken, it would benefit from developing or adopting coherent theoretical frameworks such as the evolutionary approach discussed above.

National level

Within a country, factors like culture, legislation, tax systems, educational system, infrastructure and the like may appear as constants or near-constants. Therefore, cross-national studies (or long time series) are needed for studying the influence of such factors. Empirical studies of this kind are difficult to carry out. Baumol (1990) relies on cases representing different countries and historical eras. His basic thesis is that the supply of entrepreneurs can be regarded as constant, but that the societal value of their self-interested ingenuity varies depending on the structure of rewards. The conclusion from this institutional view is that the proper way to encourage entrepreneurship is to create conditions that make entrepreneurial pursuit of self-interest accord with societal wealth creation.

The above-mentioned ERC research and research on the relationship between regional characteristics and firm start-up rates have also yielded cross-national comparisons (Delmar & Davidsson, 2000; Reynolds et al., 1994). Davidsson & Henreksson's (2000) work represents an initial attempt to relate national differences in entrepreneurial activity to institutional and cultural differences. The Global Entrepreneurship Monitor (GEM) is an on-going research collaboration between ten national teams in Europe, Asia and North America, which employs a multi-method approach that has great potential for increasing our understanding of the influence of institutional, demographic and cultural factors on entrepreneurial activity. Some early results are reported in Reynolds, Hay, & Camp (1999).

As regards culture, Shane (1992) investigated how Hofstede's (1980) cultural dimensions were related to national levels of inventiveness, as measured by patent statistics. His hypotheses that high individualism and low power distance positively influence inventiveness gained support. Another example is Lynn (1991). Much in the tradition of McClelland (1961) he related cultural values to relative growth in national income and concluded that the emphasis on 'competitive-

ness' and 'valuation of money' in a country was positively related to growth in national income. However, Lynne's type of study does not explain the micro-level processes by which cultural values translate into GDP growth. As we will argue later, explicitly addressing the micro level value creating mechanisms is essential for entrepreneurship research.

What choices of level of analysis 'explain and facilitate the role of new enterprise in furthering economic progress'?

The prospect of further progress

In the previous section we tried to demonstrate that important progress has been made in the field since Low & MacMillan (1988) published their article. Fruitful research on entrepreneurship can be, and has been, conducted on several levels. In the remainder of this article we will discuss how further progress can be achieved provided that entrepreneurship researchers pay more careful attention to their choice of levels of analysis. Our suggestions are based on the following observations:

1. The skewed distribution as regards levels actually used in empirical research. A very high percentage focuses on the firm while there is almost no representation for other possibly more relevant levels.
2. The limited usage of multi level approaches and in particular the relative lack of explicit interest in societal level effects in micro level studies.

The conceptualization of entrepreneurship as related to levels of analysis in entrepreneurship research

In order to determine which are relevant but overlooked levels of analysis and suitable multi level approaches it is necessary to use the conceptualization of entrepreneurship as the

point of departure. Our choice of levels of analysis must in the end be informed by our definition of the phenomenon that we wish to study.

We would, with Low & Macmillan (1988), Stevenson & Jarillo (1990) and Venkataraman (1997), favor a perspective on entrepreneurship that is focused on discovery and new combinations irrespective of organizational context. Opportunities may be exploited within existing or newly created firms or through trading them on the market (Shane & Venkataraman, 2000). As a tribute to Low & MacMillan, we will refer to this admittedly loosely defined domain as *creation of new enterprise* (cf. Low & MacMillan, 1988, p. 141) where ‘enterprise’ is understood as economic activity and not as the label for a formal organizational unit or structure. Like Gartner (1988) we think the main focus of entrepreneurship should be on emergence, but what emerges is new economic activity and not necessarily a new organization. We would also like to emphasize the quality of what emerges in terms of how radical new combinations the new enterprise represents and how much value it creates on micro- and aggregate levels. Hence, new enterprise is a continuous rather than a dichotomous phenomenon. With this view of entrepreneurship, there is reason for concern about the dominance of the firm level and the lack of multi level studies that was reported above.

According to the perspective of entrepreneurship we have outlined, the focal phenomenon is the emergence of the new enterprise itself, i.e., the new business activity. From this follows that the emergence of new enterprise should be at the heart of entrepreneurship studies, which, in turn, has consequences for the appropriateness of different levels of analysis. In the following we will discuss three different alternatives for studying new enterprise. First we examine new enterprise as the level of analysis for the independent and dependent variable. We then turn to multi level designs where the effects of new enterprise are assessed at aggregate levels. Finally we examine how new enterprise can be studied at other levels of analysis.

New enterprise level of analysis

We agree with Venkataraman (1997) that with new enterprise itself as the level of analysis entrepreneurship can carve out a distinct research domain. Given this position, the strong and increasing dominance for firm level analysis coupled with the absence of the new enterprise level (cf. Table 1) is an indication of many fruitful research contributions foregone. Put differently, researchers who want to make a unique and worthwhile contribution to entrepreneurship research should seriously consider making the effort to study new enterprise efforts, although collecting this kind of data is far from easy. Finding the relevant cases may be difficult as readily available data bases on individuals and firms involved in new enterprise efforts do not exist.

If chosen as the level of analysis, new enterprise efforts would be studied over time regardless of their organizational context and their human champion(s), both of which may change over time. Figure 1 depicts the principal design of studies at the new enterprise level. Focusing solely on the left-hand box of the model, examining the characteristics of the new enterprise process would make valuable contributions. Relative to studies of the characteristics of individuals and firms the characteristics of the new enterprise process have previously been vastly under-researched. Case studies describing and interpreting the process in detail (cf. Van de Ven et al, 1999) as well as surveys comparing the characteristics of different new enterprise processes could be appropriate for such studies. As indicated in the figure, it is also important to study the outcomes of new enterprise efforts, whether successful or failed and to do so in real time. If only successful efforts were studied, censoring would lead to a biased view of entrepreneurship as an economic phenomenon (Aldrich and Martinez, this issue). Real time studies are valuable as retrospective approaches are likely to be flawed by memory decay, hindsight bias and rationalization after the fact.

Multi level designs

Many types of multi level designs are conceivable (cf. DiPrete & Forristal, 1994). We will confine our discussion here to designs that make an attempt to assess the outcomes of new enterprise on higher levels of analysis, especially on the societal level. We do so because we share with Low & Macmillan an interest in the question how new enterprise at the micro level contributes to economic progress.

Quite frequently research is conducted on the individual, the firm or some other micro level while the authors' following discussion deals with unsubstantiated claims about the societal benefits of the new enterprise under scrutiny (cf. Thornton, 1999). Entrepreneurship researchers often seem to assume that micro level outcomes translate directly to the aggregate level. However, as pointed out by Baumol (1990) this is an oversimplification; new enterprise may under certain conditions reduce rather than enhance economic progress. This would be the case for illegal enterprising such as drug dealing, but also when entrepreneurial talent is spent on rent seeking activities such as litigation (Baumol, 1990). Further, as observed by Low & MacMillan (1988, p. 141, footnote) one venture's failure may be the result of competitors' reactions. If this competitive response enhances the industry's overall performance, then economic progress has still been achieved at the societal level. In other words, it is fully conceivable that successful new enterprise at the micro level translates into economic regress at the societal level and that failed entrepreneurship at the micro level contributes to economic development. Figure 2 summarizes the four possible combinations of positive and negative outcomes of new enterprise at micro and aggregate levels.

"Hero enterprise" in quadrant I is typified by the "big-time" entrepreneurs we read about in the newspapers who create value for society through the introduction of new combinations while simultaneously creating personal wealth. The "robber enterprise" in quadrant II creates personal

wealth but no value for society. We may think of the introduction of new innovative pyramid schemes or new distribution methods for illegal drugs as examples. “Catalyst enterprise” (quadrant III) fails, but the ideas and methods developed in the enterprise process are picked up and successfully exploited by others. It is also possible that the potential threat of the new enterprise leads competitors to innovative responses that benefit society while keeping the new enterprise out of the market. Quadrant IV, finally, refers to genuine failures, i.e., enterprise attempts that fail and lack positive spillover effect on other actors.

INSERT FIGURE 2 ABOUT HERE!

In the terminology of the figure, most research assumes that new enterprise is either of the ‘hero’ or ‘failed’ type. However, there is reason to believe that neither ‘robber enterprise’ nor ‘catalyst enterprise’ are marginal phenomena that could be disregarded. Baumol (1990; 1993) provides convincing evidence for the negative economic effects of robber enterprise. The fact that economic growth is associated with new venture volatility, i.e. the sum of new firm establishments *and* closures (Reynolds, 1999), suggests that catalyst enterprise may have a significant impact on the economy. We would therefore hold that the execution of multiple level studies that explicitly address the relationship between micro and aggregate level outcomes is critically important, in particular for researchers adhering to views of entrepreneurship similar to Low & MacMillan’s (1988). The principal design of a study that links the new enterprise level to societal level outcomes is depicted in Figure 3.

INSERT FIGURE 3 ABOUT HERE!

As noted above, studies conducted at the new enterprise level would follow new enterprise efforts over time regardless of their organizational context and their human champion(s), both of which may change over time. In multi level designs we add the requirement that the venture's impact on the economy be assessed and not only its micro level performance. This is in line with Venkataraman's (1997, p. 132) argument that the absolute performance of ventures on micro and aggregate levels, and not relative performance of firms, is the more relevant outcome measure in entrepreneurship studies.

Needless to say, studies of the suggested kind are extremely demanding. Satisfactory statistical studies are almost certainly impossible to carry out except perhaps for very small populations under very particular circumstances such as an island economy. In survey-based studies, complete assessment of external effects will not be attainable, but steps in that direction may nevertheless be valuable. Comprehensive case studies of satisfactory quality would not be an easy task, either. Estimating with certainty the total impact of one new enterprise process would be hard indeed, but nevertheless much more doable than pursuing that goal in a survey-based study. Comprehensive case studies may prove invaluable for understanding the implications of the results of more broadly based studies at aggregate levels of analysis. If the community of entrepreneurship researchers is serious about the aggregate level effects of new enterprise such studies ought to be carried out.

An additional type of cross level study is of great importance. In many countries very substantial amounts of money are spent on various national or regional programs aimed at encouraging entrepreneurship, e.g. increasing the firm start-up rate or the growth of small firms. From the regional point of view, a relevant study would investigate whether money spent regionally on such programs had—after controlling for other factors—a positive effect on new enterprise, and whether new enterprise in turn had a positive effect on regional economic well being. That is, a

single level study (regional characteristics → regional new enterprise activity → regional outcomes) would suffice. From the point of the national government, however, there may be concern that a cannibalizing zero sum game is going on, where one region's gain is another region's loss. Therefore, the relevant level for outcome assessment is the economy-at-large, which requires a cross level design.

Single level designs

Apart from approaches actually using new enterprise as the explicit level of analysis, new enterprise can be meaningfully studied across a range of levels. In addition to research examining the new enterprise process, new enterprise can be studied as an outcome ('dependent variable'), or as an explanatory ('independent') variable (cf. Stevenson & Jarillo, 1990).

Figure 4 depicts the layout for single level designs. The 'level_i' in question could be thought of as the individual, the team, the firm, the industry, the cluster, the region, the nation or some other more or less aggregate level. Regardless of level, new enterprise would always be at the heart of the analysis. One type of study would consider the left-hand and the middle boxes, using new enterprise as a dependent variable. Other designs would focus on the right hand side, investigating for a particular level what the outcomes of new enterprise are for that same level. Finally, comprehensive designs are conceivable which would attempt to analyze the whole model within one and the same study, albeit with regard to just one particular level of aggregation.

INSERT FIGURE 4 ABOUT HERE

To exemplify the latter we can think of a study at the firm level. This would relate characteristics of the firm (including its human capital and aspects of the environment it currently operates in, which we regard as attributes of the firm) to its quantity and quality of new enterprise (how many and how radical new combinations it conducts, and by which processes). It would

then continue to relate these aspects of new enterprise to firm level outcomes such as survival, growth and profitability. In an example of the regional level, the characteristics would refer to structural, cultural, and institutional factors that signify the regions. New enterprise could be measured as rates of new firm formation and change in the sector composition of the regional economy towards expanding industry sectors. Outcomes would in this case be aggregate regional income and other indicators of economic well being and quality of life.

Figure 4 is useful for addressing the problem of design mismatch. The schema suggests that, in order to qualify as good entrepreneurship research, a study would have to deal explicitly and properly with new enterprise. It is evident that studies on the characteristics of established small businesses and their owner-managers as related to relative business performance, valuable as they may be, do not consider new enterprise and thus do not qualify as entrepreneurship research. If we relate human and organizational characteristics to business outcomes without consideration of the middle box in Figure 4 there is no telling whether anything we would like to call entrepreneurship was involved. This type of mismatch — the leaving out of the explicit consideration of the new enterprise unit — should be relatively easy to detect and avoid.

The schema also suggests that research should pay close attention to the consistency of level of analysis across dependent and independent variables. A study on the individual level of analysis would relate characteristics of individuals to their new enterprise behaviors, either as founders of independent businesses or as champions of internal ventures. In order to be able to single out what was truly attributable to the individual from the idiosyncrasies of the particular opportunity the individuals would have to be studied across several new enterprise efforts (cf. Venkataraman, 1997). The assumption that individual characteristics can explain much of the process and outcomes of a single event is something psychologists are aware is a naive belief (Ajzen & Fishbein, 1977, cf. Aldrich & Zimmer, 1986) but which entrepreneurship researchers in

many cases have learned the hard way. More appropriate outcome variables to use in individual level studies would thus be ‘entrepreneurial career performance’ in terms of the number and proportion of successful new enterprise processes, the total net worth created, or at least something approaching that ideal.

Finally, new enterprise should not only be included in entrepreneurship studies, it should also be appropriately operationalized. As our view of entrepreneurship focuses on the emergence of new economic activity regardless of organizational context, it reaches beyond new independent start-ups, and admits that some independent start-ups to a very limited extent create new economic activity. To illustrate the consequences of this, consider again the region level example above. If such a study relied entirely on the number of business foundings as the operationalization of entrepreneurship and did not consider growth of employment in new industries we might get results that were biased or at least hard to interpret. This would be the case if individuals with low education in disadvantaged regions start low-potential businesses for subsistence reasons whereas in vibrant regions highly educated teams start high-potential ventures for market-based reasons. A similar problem applies to the evolutionary approach when applied to entrepreneurship defined as new enterprise². It may well be that in some industries new enterprise is mainly introduced by newly founded firms, whereas other industries can be equally dynamic with the only exception that existing firms are the agents that introduce new enterprise (cf. Shane & Venkataraman, 2000). If so, operationalizing entrepreneurship as rate of organizational foundings is dubious practice.

² It should be noted that Aldrich & Martinez (this issue) include all business founders in their definition of ‘entrepreneur’, admitting that most of them do not create much ‘new enterprise’ as we here use that term. Hence, their definition is consistent with their theoretical perspective.

Conclusion

The first purpose of this article was to analyze what levels of analysis entrepreneurship researchers actually use. While examples of many different levels and combinations thereof can be found there is a strong and growing dominance for firm level analysis. Other observations were that the use of more aggregate levels such as the region and the industry had declined in the investigated journals and that there has been little heeding of Low & MacMillan's (1988) call for multiple level approaches.

Our second purpose was to describe examples of progress during the last decade as regards entrepreneurship research at different levels of analysis. Evidence of clear progress could be found for all levels considered. However, entrepreneurship research is still young and the door is wide open for researchers to make additional contributions.

Saying that, we come to our third purpose, which was to discuss the appropriateness of using different levels of analysis and combinations thereof. We did so from the perspective of Low & MacMillan's (1988) definition of entrepreneurship as 'new enterprise'. Concerning the dominant levels of analysis, most notably the firm, we would urge researchers who aim at making a contribution to cumulative knowledge on entrepreneurship to carefully make sure that their study really addresses pursuit of opportunity and new combinations, i.e., *new enterprise*. Research on small business, for example, is well worth doing but neither that research nor the emerging scholarly field of entrepreneurship benefit from attaching the entrepreneurship label to it unless it deals with new enterprise in small business (Hornaday, 1990). We also suggested for single level studies that great care be taken to achieve consistency in the level of analysis used for the dependent and the independent variables. For instance, we pointed out that characteristics of individuals are unlikely to explain very much of the outcomes of single ventures.

In addition to the explicit consideration of new enterprise in all entrepreneurship studies, we would welcome an increased use of new enterprise, i.e. the new business activity itself, as the level of analysis. Following the new enterprise efforts over time, through possible changes of human champions and organizational affiliations, and trying to assess its outcomes on both micro and aggregate levels is a design that accords well with Low & MacMillan's (1988) entrepreneurship definition. Although research at the new enterprise level may be difficult to carry out, as data are not readily available and it calls for longitudinal real-time studies, our conclusion is that it may have substantial impact on the entrepreneurship field and is well worth the effort.

Low & MacMillan (1988) explicitly called for more multiple level designs. In connection with this point, we put particular focus on the need for linking new enterprise at the micro level to societal level outcomes. This, we find, is important not only from a purely knowledge-producing point of view. It may be argued that the field of entrepreneurship as a scholarly field exercised in business schools is at a crossroads (cf. Low, this issue). One option is to restrict itself in research and teaching to be, roughly, about 'the art of enriching oneself through by starting and growing one's own business'. By so doing, it would also restrict itself to a more manageable domain. Alternatively it would include, as Low & MacMillan (1988) and Venkataraman (1997) suggest, how the discovery and exploitation of profitable opportunities for private wealth, i.e. new enterprise, translates into societal wealth creation.

We would strongly suggest that entrepreneurship as a scholarly field retains its interest in societal level outcomes. This is not based solely on personal interests or moral sentiments on our part. In order to establish and retain academic credibility beyond the current hype, entrepreneurship researchers need to prove rather than assume the positive societal effects of new enterprise. They also need to have an open minded attitude towards the possibility, as pointed out by Baumol

(1990), that under some circumstances new enterprise on the micro level is not beneficial to society (cf. Low, this issue).

Finally, in our suggestions concerning levels of analysis for entrepreneurship we have suggested what collectively amounts to a very broad domain. Acknowledging the risk of over-extension we would suggest that researchers regard entrepreneurship as a broad research domain concerned with novelty and value creation in the economy. Theory and empirical studies in that domain should deal with more precisely defined issues, concepts and levels of analysis. It is also important to attract disciplinary specialists into the field, to cooperate with them and to specialize within the domain, thus making it possible to closely follow the theoretical and methodological advances within the disciplines. The future is full of opportunities – also for entrepreneurship researchers!

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Table 1. A comparison of levels of analysis over time in three leading entrepreneurship journals

	1988/89	1998
<i>Micro levels</i>	59.4% (38)	77.7% (49)
- Individual	26.6% (17)	20.6% (13)
- Firm	26.6% (17)	36.5% (23)
- Other (single) micro-level	1.6% (1)	1.6% (1)
- Individual & firm	1.6% (1)	11.1% (7)
- Other multiple micro-level units ^a	3.1% (2)	7.90% (5)
<i>Aggregate levels</i>	21.9% (14)	11.1% (7)
- Industry	7.8% (5)	3.2% (2)
- Region	6.2% (4)	3.2% (2)
- Other single or multiple aggregate levels ^b	7.8% (5)	4.8% (3)
<i>Micro/aggregate mix^c</i>	12.5% (8)	11.1% (7)
<i>Other/unclassifiable</i>	6.2% (4)	0.0% (0)
Total	100.0% (64)	100.0% (63)

Note: *a*) 1988/89: Firm & innovation (1); individual & group (1); 1998: firm & management (3); other combinations (3). *b*) 1988/89: nation (2); other combinations (3); 1998: other combinations (3). *c*) 1988/89: firm & industry (2); firm & region (2); other combinations (4). 1998: firm & industry (3); firm & network (2); other combinations (2).